

Moreover, there are roughly two methods to control current carried through the organic light emitting diode by the TFTs. More specifically, a method of controlling current in the voltage range called the saturation region and a method of controlling current in the voltage range that reaches to the saturation region. In the specification, the Vd range where the current value is nearly constant is called the saturation region in the Vd-Id curve. The invention is not limited to the methods for driving the organic light emitting diode, which can use arbitrary driving methods.

[0067] Then, the treatment to partially reduce the adhesion of the first material layer 312 to the second material layer 313 is performed. The treatment to partially reduce the adhesions is the treatment that laser light is partially irradiated onto the second material layer or first material layer along the rim of the area to be peeled, or the treatment that a local pressure is applied from outside along the rim of the area to be peeled and the inside or interface of the second material layer is partially damaged. More specifically, it is acceptable that a hard needle is pressed vertically with a diamond pen and moved with load. Preferably, it is fine that a scribe is used, an amount to press is set from 0.1 to 2 mm and pressure is applied to move the edge of the scribe. In this manner, it is important to create a portion where the removal phenomenon tends to be generated before peeling, that is, to create a trigger. The pretreatment to selectively (partially) reduce the adhesion is performed, defects in peeling are eliminated and the yield is enhanced as well.

[0068] Subsequently, as shown in FIG. 3B, a flexible printed circuit 321 (FPC) is bonded to a terminal electrode disposed at the end part of an interconnect wiring line connected to the TFTs disposed in the peeled layer 314a.

[0069] Then, a support 323 is bonded to the peeled layers 314a and 314b with a first adhesive 322. The support 323 originally having curvature and elasticity is bonded with the external force applied. After bonded, the restoring force is exerted over the support 323, but the substrate 311 has the higher rigidity, and thus the support does not return into the original shape at this stage. In the case of the organic light emitting diode, the support 323 is generally formed of an encapsulation material, which has functions to suppress the degradation of the EL layer, the anode and the cathode mainly caused by the penetration of external water and oxygen.

[0070] As the first adhesive 322, the reactive curing type, thermosetting type, photo-curing type and anaerobic type of adhesives are named. As the composition of the adhesives, any types are fine such as the epoxy type, the acrylate type and the silicon type. However, the organic light emitting diode is weak to water and oxygen, and thus materials having high barrier properties against water and oxygen are desirable. Such the adhesives are formed by coating, for example. In addition, it is fine to coat the adhesives over the support or the peeled layers 314a and 314b. In the embodiment, a UV cure adhesive is used for the first adhesive 322. In this case, ultraviolet rays are irradiated, whereby the first adhesive 322 is cured. The direction of irradiating ultraviolet rays is properly determined by a person to carry out according to the configuration and fabrication method of the organic light emitting diode and the circuit configuration of the pixel. That is, it is fine to irradiate the ultraviolet rays from either side, from the substrate 311 or the support 323.

However, the EL layer is generally damaged by irradiating the ultraviolet rays. Therefore, attention is needed to use a light shielding mask for the portions not to be irradiated by the ultraviolet rays, or to adjust the energy of the ultraviolet rays to cure only the adhesive, whereby not damaging the other portions.

[0071] Then, the substrate 311 disposed with the first material layer 312 is peeled from the area where the adhesion has been partially reduced, and it is peeled off by a physical unit in the direction of an arrow shown in FIG. 3C. The second material layer 313 has the compressive stress and the first material layer 312 has the tensile stress, and thus they can be peeled by a relatively small force (for example, human hands, wind pressure blown from a nozzle, and ultrasonic waves).

[0072] In this manner, the peeled layers 314a and 314b formed over the second material layer 313 can be separated from the substrate 311. At this stage, the support 323 returns into the original shape by the restoring force, and in accordance with this, the layers bonded to the support 323 are also curved (FIG. 3D).

[0073] Subsequently, as shown in FIG. 3E, a transfer object 351 is bonded to the second material layer 313 (and the peeled layers 314a and 314b) with a second adhesive 352.

[0074] As the second adhesive 352, various adhesives of the reactive curing type, thermosetting type, photo-curing type, and anaerobic type are used. In the embodiment, a UV cure adhesive is used for the second adhesive 352. The direction of irradiating ultraviolet rays can be determined properly by a person to carry out according to the configuration and fabrication method of the organic light emitting diode and the circuit configuration of the pixel. That is, it is fine to irradiate from either side, from the transfer object 351 or support 323. However, as similar to the first adhesive 322, attention is needed to use a light shielding mask for covering the portions not to be irradiated by the ultraviolet rays, or to adjust the energy of the ultraviolet rays to cure only the adhesive, whereby not damaging the other portions.

[0075] According to the steps, the light emitting device having the peeled layers 314a and 314b over the second adhesive 352 and the transfer object 351 can be fabricated. Such the light emitting device is characterized by having a curvature ranging from 50 to 200 cm with no external force applied. In addition, the oxide layer 313 to be the second material layer is disposed between the second adhesive 352 and the peeled layer 314a. The light emitting device thus obtained has the second material layer 313 deposited by sputtering and has a slight amount of a rare gas element contained in the second material layer 313. Thus, the overall device can be formed flexible as well. Furthermore, the light emission from the organic light emitting diode can be extracted from the support 323 side, the transfer object 351 side or both sides. To extract light emission only from the support 323 side is called the top face emission or upper emission (also called the top emission). To extract light emission only from the transfer object 352 side is called the bottom emission or under emission. To extract light emission from both sides of the support 323 and the transfer object 352 is called the both sides emission or bidirectional emission. In any case, to extract the light emission of the organic light emitting diode to the outside, at least one of the